BRIEFER ARTICLES.

FACILITIES FOR BOTANICAL RESEARCH AT THE NAPLES ZOOLOGICAL STATION.

(WITH PLATE XXVII)

IT was my good fortune to be able to occupy the Smithsonian table at the Naples Zoological Station for three months during the spring of 1896.[1] I had received some time before a printed circular from the director, Professor Dohrn, telling what apparatus I would need to bring and how best to bring it, and in accordance with the wish therein expressed I had written the station stating when I should arrive and what algæ I should desire for study. On the morning of my arrival I visited the station, introduced myself, and found a room prepared for me, with several trays full of interesting algæ on the table. I was put in care of an employé, who helped me to find suitable lodgings, and within three hours I had my baggage moved into them and was installed ready for work in my laboratory at the station. The common reagents for microscopic work had been placed on my table, and such special fixatives and stains as I needed were promptly prepared for me by the chemist in charge of supplies. As I expected to do cytological work I asked for a paraffin oven, which was at once installed. Wall tables, a microscopic work desk, and aquaria were ready, and within two days I had various species of algæ growing vigorously. Almost every want of the investigator is anticipated and provided for. Servants are ready to assist in any heavy work, keep the fire going when the weather is chilly, and clean up the room at night. The abundant and varied facilities for collecting, ranging from a diving suit (found very useful by Berthold in his studies on the distribution of algæ in the gulf) to a small steam yacht, the "Johannes Müller," are at the disposal of the investigator. Cav. Lo Bianco, whose beautiful museum specimens are widely known, has an incredi-

[1] I wish here to thank Secretary S. P. Langley and the committee in charge of appointments to the Naples table for this privilege.

bly wide knowledge of forms and is always ready to assist in procuring any desired species. The library, very rich in zoological and general biological works, is well indexed and is open every day until six p. m. The station buildings, open until nine p. m., are beautiful three-story white structures. On the ground floor of the main building is the unrivaled aquarium, which is of great interest to all tourists, rich as

FIG. 1. View of the Naples Zoological Station from the southwest.

the city is in other attractions. The cut here given (*fig. 1*) shows a view from the southwest. The alcoves along the south side of the library may be seen to the right. The three large windows in the middle of the west front are those of the botanical rooms.

The flora and fauna of the gulf of Naples are exceedingly rich and many of the best collecting grounds for the botanist are close at hand. The whole region is surpassingly beautiful and historically one of the most interesting spots in the world. Occasional cruises on the steam yacht or excursions into the country round about give the investigator a chance to combine his collecting work with the most pleasurable of outings. Of the uniform courtesy and liberality of the director, Professor Dohrn, and his assistants, Professors Paul Meyer and Hugo Eisig, as well as other members of the staff, there is no need here to speak.

The advantages enumerated above are, however, already known to any who may happen to have read the reports of the zoologists on their stay there. It is more particularly to another side of the institution, which has not, I am sure, received the attention it deserves from American botanists, that I wish to allude.

Although known officially as the Zoological Station of Naples, the director has from the first recognized the importance of a knowledge of the flora of the Gulf; as many as three volumes of the magnificent *Fauna und Flora des Golfs von Neapel* relate to algæ, and in the *Mittheilungen aus der Zoologischen Station zu Neapel* there are a number of valuable papers on marine plants by Schmitz, Berthold, Falkenberg, and others.

Of still more importance is the fact that in the recently erected west wing of the station building there is a suite of laboratories[2]

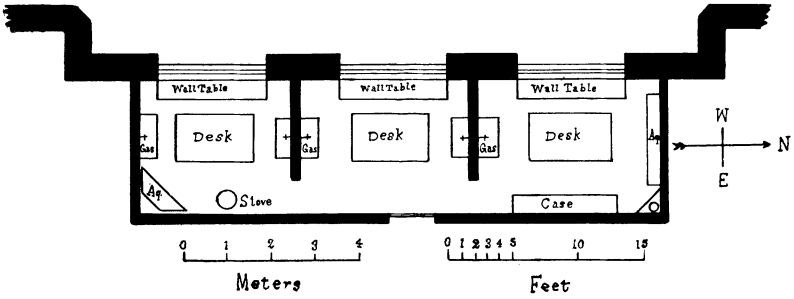

FIG. 2. Ground plan of the botanical laboratories of the Naples Zoological Station.

expressly set aside for botanical work. The ground plan of these rooms is given in *fig. 2*.

Hansen[3] has already described the rooms briefly and enumerated the fairly good set of physiological apparatus belonging to them, so I need only state that inasmuch as through the liberality of the American Society of Naturalists two good microtomes are furnished for the use of the incumbents of American tables, and as the station furnishes small but extremely convenient paraffin ovens, cytological and morphological research is as well provided for as is physiological.

[2] They are behind the three large windows shown in *fig. 1*, and are to be seen also in *Plate XXVII.*

[3] HANSEN, A.: Bericht über die neuen botanischen Arbeitsräume in der zoologischen Station zu Neapel, Bot. Zeit. **50**: 279-285. 29 Ap. 1892. Reprinted with a few changes in Mittheilungen aus d. Zool. Stat. zu Neap. **10**: 654-658. 1 Ap. 1893.

The library, although mainly zoological, has many sets of periodicals containing botanical articles, and possesses in addition about three hundred and fifty volumes exclusively on botany, many of them being very costly illustrated works on marine algæ, and also over seventy-five volumes of botanical reprints and author's copies containing on an average about ten articles each.

There is a very full alcoholic collection of the marine algæ prepared by Berthold and a fairly good local herbarium, which in connection with Berthold's valuable list and sketch of the geographical distribution[4] render it easy, even for beginners in the study of marine flora, to become acquainted with the common forms and to obtain any desired species. The importance of such facilities for those making only a short stay is obvious.

So far, although about thirty-five botanists have worked at the station, many of them at several different times, only three Americans are among the number, namely Dr. H. L. Russell, who worked on bacterial flora of the gulf[5]; Mr. D. G. Fairchild, who studied karyokinesis in Valonia[6]; and the writer, who worked on the cytology of the Sphacelariaceæ.[7] Among other European botanists who have visited the station might be mentioned Goebel, Solms-Laubach, Schmitz, Berthold, Falkenberg, Meyer, Hansen, Fischer, Ambronn, Noll, Went, Valiante, Reinke, Klebs, Famintzin, Golenkin, Klemm, Oltmanns, Benecke.

It should be stated that a table costs five hundred dollars a year, and that at present there are but two supported in this country, one by the Smithsonian Institution and the other by Columbia University. If the splendid facilities for algological work were more generally known I believe that American botanists could easily use at least one table, this too even if, as we all hope, the plans now proposed looking toward the establishment of a tropical botanical station in America can be carried out, for probably there will always be Americans either studying or traveling in Europe to whom the opportunity of spending even a few months at Naples would be very welcome, especially since

[4] BERTHOLD, G.: Ueber die Vertheilung der Algen im Golf von Neapel nebst einem Verzeichniss der bisher daselbst beobachteten Arten: Mittheilungen aus d. Zool. Stat. zu Neap. **3**: 393-536. Tab. 1–3. 1882.

[5] RUSSELL, H. L.: BOT. GAZ. **17**: 312-321. Oct. 1892.

[6] FAIRCHILD, D. G.: Berichte d. deut. bot. Ges. **12**: 331-338. *pl. 21.* 1894.

[7] SWINGLE, W. T.: Jahrbücher f. wiss. Bot. *ined.*

there are many interesting forms growing there which do not occur in the waters of the New World.—WALTER T. SWINGLE, *Washington, D. C.*

EXPLANATION OF PLATE XXVII.

A view of Naples and Vesuvius, looking east from the summit of the Vomero, an encircling range of hills several hundred feet high. In the midst of the park which extends along the shore may be seen the buildings of the Zoological Station.

BOTRYCHIUM TERNATUM SWARTZ, VAR. LUNARIOIDES (MICHX.) MILDE.[1]

(OSMUNDA BITERNATA Lamarck; B. BITERNATUM Underwood.)

I OFFER the following criticism for two reasons; first, because I cannot agree with Dr. Underwood in his attempt to reinstate Lamarck's species on characters so unreliable as those which he brings forward in his article on the "Rarer Ferns in Alabama;"[2] and second, because I consider it an error to credit Professor Eaton with Milde's combination, as he had nothing whatever to do with it. Again, Dr. Underwood is in error in saying that Professor Eaton "overlooked its very distinct leaf and bud characters"; on the contrary those characters were very carefully considered by Professor Eaton at the time he elaborated the species for his *Ferns of North America*. It was my privilege to be permitted to assist Professor Eaton on that portion of his work, and it was through my finding the Georgia specimen of true *lunarioides* in the Gray Herbarium that he was led to change his original treatment of the species. From this it will be seen that the character of the "leaf and bud" were well known to Professor Eaton and had received proper consideration.

But let us take up, one by one, all of the characters brought forward by Dr. Underwood, and see to what real importance they are entitled.

First, as to the character of the bud. He correctly states that "*B. ternatum* is characterized by its hairy bud," but when he adds "while the bud of *B. biternatum* is smooth," the statement requires some qualification, for in all of the specimens of *lunarioides* in my own private

[1] Read before the New England Botanical Club, April 2, 1897.

[2] BOT. GAZ. 22: 407. 1896.

NAPLES and the ZOÖLOGICAL STATION.